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Arizona Occupational Profile

A Labor Market Information Publication
of the Department of Economic Security

MINING

UTAH
COCONINO
MOHAVE
KINGMAN
FLAGSTAFF
NAVAJO
APACHE
HOLBROOK
ST. JOHNS
CALIFORNIA
PRESCOTT
YAVAPAI
NEW MEXICO
PARKER
LA PAZ
GILA
PHOENIX
GLOBE
GREENLEE
CLIFTON
MARICOPA
FLORENCE
YUMA
SAFFORD
PINAL
YUMA
GRAHAM
TUCSON
PIMA
COCHISE
MEXICO
SANTA CRUZ
BISBEE
NOGALES
ARIZONA

OCCUPATIONAL PROFILE

The value of current and accurate occupational employment information has long been recognized by job seekers, public and private administrators, and those involved in training, recruiting, and counseling. A major source of this information in Arizona is the Occupational Employment Statistics (OES) Program--a cooperative effort between Arizona and the U.S. Bureau of Labor Statistics.

This *Occupational Profile* is one in a series of publications produced from information developed by the Occupational Employment Statistics survey. These publications represent one of several occupational employment information delivery systems incorporating OES survey data. The survey is used to collect employment data, by county, for over 700 occupations in Arizona. From these surveys, which require the cooperation of the Arizona business community, current employment in the various occupations is determined, and from this an occupational outlook is formulated. The *Occupational Profiles* contain the survey findings and examine, individually, the industries of Arizona.

Surveyed industries include:

Mining
Construction
Manufacturing
Transportation, Communications, and Public Utilities
Trade
Finance, Insurance, and Real Estate
Services
Hospitals
Educational Services
Government

For further information, or to comment on any aspect of this program, please write to the address on the back cover.

INDUSTRY INFORMATION

INDUSTRY DESCRIPTION

Establishments categorized in mining include firms that extract materials occurring naturally: solids, such as coal and ores; liquids, such as crude petroleum; and gases, such as natural gas. The term "mining" also includes exploration, quarrying, well operation, milling, and other preparation customarily done at the mine site or as a part of mining activity. Firms primarily involved with smelting and refining are categorized in manufacturing rather than mining.

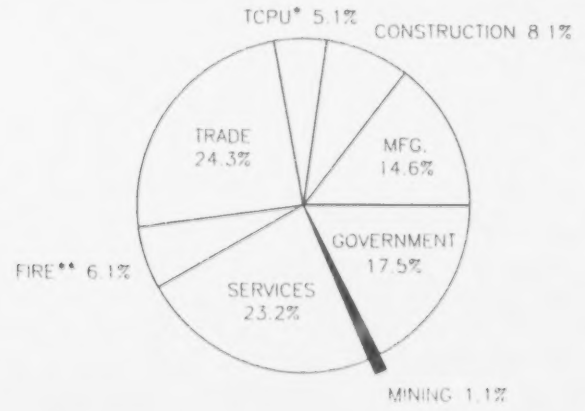
A detailed description of the types of firms surveyed is found in the *Standard Industrial Classification (SIC) Manual*[1] under codes 10 through 14.

INDUSTRY CHARACTERISTICS

Approximately 1 percent or 13,600 of Arizona's 1.2 million workers earning a wage or salary in May 1984 were directly associated with mining. This capital intensive industry's small employment total belies the state's role as a major U.S. producer of mined products and the industry's economic significance to certain Arizona communities. Valued at $1.5 billion in 1983, mined products in Arizona accounted for more than 7 percent of the total U.S. non-fuel mineral output of $21 billion. Only California and Texas produced a greater value of minerals with 8.3 and 7.4 percent of the nation's total, respectively.

The great majority of Arizona's mine workers are engaged in the extraction of metal ores--92 percent of which are involved in the mining and milling of copper. In 1983, with 16 of the nation's 25 leading

FIGURE 1: ARIZONA NONAGRICULTURAL EMPLOYMENT, 1984



* TCPU = Transportation, Communications, and Public Utilities
** FIRE = Finance, Insurance, and Real Estate

[1]Office of Management and Budget, *Standard Industrial Classification Manual*, 1972 Edition, pp. 31-43.

copper producing mines within its boundaries, Arizona contributed 65 percent of the total U.S. production. Valued at more than $1.75 billion in that year, production of the metal in the United States trailed that of both Chile and the U.S.S.R.

Arizona's lofty position as a producer of molybdenum, silver, and gold results primarily from efforts to recover these metals as by-products and coproducts of copper production. Also, the recovery of turquoise at several copper mines contributed to Arizona's premier ranking, nationally, in gemstone production.

Employing approximately 1,900 in 1984, firms mining fuels and nonmetallic minerals represented 14 percent of Arizona's mine workers. Miners of bituminous coal accounted for the bulk of this employment and were followed by those mining sand and gravel, lime, and crushed stone.

FIGURE 2: ARIZONA MINE PRODUCTION AND SHARE OF U.S. OUTPUT 1983

Commodity	Value	% Share of U.S. Output	Rank in Nation
Copper	$1,144,286	65	1
Molybdenum	79,459	49	1
Sand and Gravel	75,000	4	NA
Silver	$1,383	10	5
Gold	26,284	3	7
Stone (Crushed)	24,079	*	NA
Gemstones	2,800	37	1

NA - Not Available
* - Less than .5 Percent

Source: U.S. Department of Interior, Bureau of Mines.

With 1 percent of the state's workers, Arizona's copper industry provided $369 million or 1 percent of the state's total personal income in 1984. Approximately 4 percent, however, of the state's basic personal income was generated by the industry. For comparison, other sources of this income, which is derived from the export of goods and services outside the state, were manufacturing (29 percent), agriculture (7 percent), and tourism (4 percent).

Mining activities, and therefore employment, exist in every Arizona county. Dictated by the location of mineral deposits, most of the mining employment is concentrated in Pima and Pinal counties where copper deposits are located. Copper was produced at 29 operations in 1983

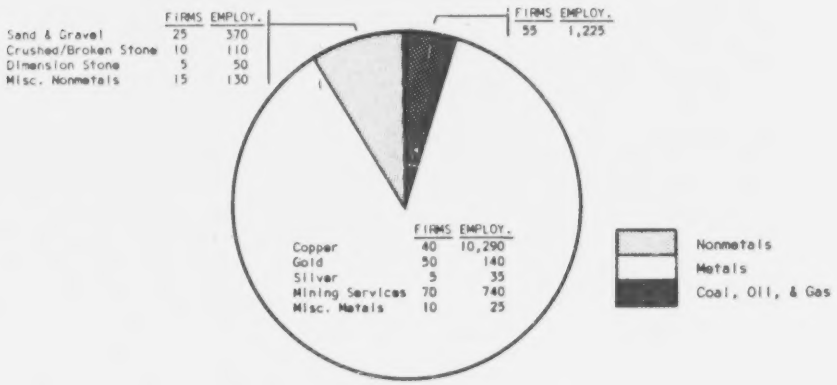
FIGURE 3: LEADING NONFUEL MINERAL PRODUCING STATES IN 1983

	Value (000s)	Percent of U.S. Total	Principal Minerals, in Order of Value
California	$1,764,401	8.3	Boron Minerals, Cement, Sand and Gravel, Stone (Crushed)
Texas	1,568,557	7.4	Cement, Stone (Crushed), Sulpher, Sand and Gravel
Arizona	1,510,878	7.1	Copper, Cement, Molybdenum, Sand and Gravel
Minnesota	1,455,030	6.9	Iron Ore, Sand and Gravel, Stone (Crushed)
Florida	1,274,979	6.0	Phosphate Rock, Stone (Crushed), Cement, Clays
Michigan	1,160,691	5.5	Iron Ore, Cement, Magnesium Compounds, Salt
Georgia	850,224	4.0	Clays, Stone (Crushed), Cement, Stone (Dimension)

Source: U.S. Department of Interior, Bureau of Mines.

in the following counties, in descending order of output: Pima, Pinal, Greenlee, Gila, Yavapai, Cochise, and Mohave. Large-scale copper operations accounted for virtually all the molybdenum produced in Arizona in 1983. Ninety-two percent of the state's silver was produced by 12 large copper mines, while 95 percent of the gold originated in eight copper operations. Pinal County yielded the most gold and was followed by Greenlee, Pima, Cochise, Mohave, and Yavapai counties.

FIGURE 4: MINING EMPLOYMENT
BY MAJOR ACTIVITY - 1984



Firms mining copper tend to be much larger than those working other deposits. Pinal and Pima counties account for 54 percent of Arizona's mining employment, yet, only 29 percent of all mining firms are found within the borders of these two counties. Arizona's 40 copper mining firms employed an average of 260 employees in 1984, while the 55 gold and silver mining establishments, for example, employed an average of three employees and had a wider geographical distribution. Although only 36 percent of the 290 mining establishments in Arizona mined metal ores in 1984, they employed 86 percent of the industry's workers.

Statewide employment in mining is not substantial, but the industry continues to be an important basic component in several counties and is the principal employer in some communities. In 1984, approximately 50 percent of Greenlee County's workers were employed by a mining company. In Pinal County, one of every four workers was employed in mining, while in Gila County the ratio was one in five.

FIGURE 5: MINING EMPLOYMENT AND MINERAL PRODUCTION BY COUNTY

County	Average 1984 Employment	Leading Minerals Produced in 1982 By Order of Value
Pinal	3,800	Copper, Molybdenum, Gold, Silver, Sand & Gravel (Construction)
Pima	3,400	Copper, Molybdenum, Cement, Silver, Sand & Gravel (Const.)
Greenlee	1,750	Copper, Gold, Silver, Sand & Gravel (Const.), Molybdenum
Gila	1,550	Copper, Molybdenum, Silver, Gold, Sand & Gravel (Const.), Lime
Navajo	1,050	Coal, Sand & Gravel
Maricopa	600	Sand & Gravel (Const.), Lime, Salt, Clays
Yavapai	500	Copper, Cement, Lime, Molybdenum, Silver, Sand & Gravel (Const.)
Cochise	225	Copper, Lime, Gold, Silver, Sand & Gravel, Lead
Mohave	225	Sand & Gravel (Const), Copper, Gold, Molybdenum
Graham	75	Sand & Gravel (Const.), Pumice
Yuma/La Paz	75	Sand & Gravel (Const.), Copper, Silver, Sand & Gravel (Industrial)
Apache	50	Sand & Gravel (Ind.), Clays Sand & Gravel (Const.)
Coconino	50	Sand & Gravel (Const.)
Santa Cruz	Confidential	Sand & Gravel (Const.)

Source: U.S. Department of Interior, Bureau of Mines.

INDUSTRY TRENDS

The first significant gold discovery in Arizona by Americans is reported to have occurred in 1858 on the Gila River. A decade of scattered gold mining activity soon gave way to the search for and development of silver, and Arizona's standing as a producer of mined products was established. Because silver was often found in proximity to copper deposits, certain gold and silver mining firms evolved into copper producers. Founded in 1872, the Morenci-Clifton District was the state's first successful copper mining operation.

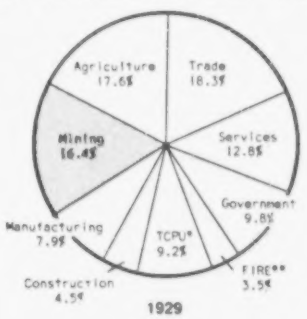
Mining quickly established itself as Arizona's most important industry--employing 21 percent of the state's labor force by 1880. By 1896, total mineral output reached $14 million as compared to total output for the state's stock and agriculture industries valued at $3 million and $2 million, respectively.

Ensuing diversification of economic activity in the state brought about a profile that reflected growing service and trade industries. In 1929, for example, personal income derived from services and trade nearly equaled that from mining and agriculture. It was at this time, however, that the significance of mining to the state as a whole began to decline. Mining's share of Arizona's personal income declined from 16 percent in 1929 to the current level of 2 percent. Less an indication of the health of the mining industry, this evolution reflects the diversification of the state's economy and the rapid expansion of other industries in the state.

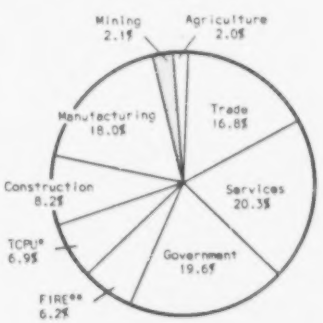
Although the long-term employment trend in Arizona's mining industry has been upward, it has, over the years, fluctuated as it reacts to international forces affecting the price, demand, and supply of copper. This long-term trend notwithstanding, mining employment has, since a recent peak in 1981, dropped precipitously. From June 1981 to September 1982, employment in mining declined by nearly half and by 1984 averaged 13,300--a level that had not been seen since 1959. Despite these declines, output tonnage in 1984 was only 11 percent below the average of the 1970s--reflecting productivity gains made by the industry in recent years. Because of price decreases, however, the contribution of mining's output to the state economy has diminished more severely.

Having doubled its employment between 1967 and 1974, mining employment subsequently followed a roller

FIGURE 6: ARIZONA'S SHIFTING INDUSTRY PROFILE BASED ON SOURCE OF PERSONAL INCOME



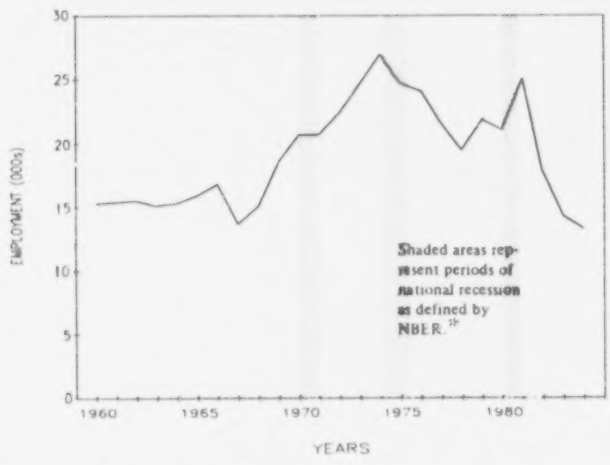
1929



1983

* TCPU = Transportation, Communications, and Public Utilities
** FIRE = Finance, Insurance, and Real Estate
Source: Bureau of Business and Economic Research
College of Business, Arizona State University

FIGURE 7: ARIZONA MINING EMPLOYMENT 1960-1984



* National Bureau of Economic Research

coaster trail--falling victim to the 1974-75 recession, cresting in 1981, and tumbling again amidst recessionary pressures in 1981-82. Speculation in the commodities markets contributed significantly to the record-level prices of copper and precious metals in the first few months of 1980. By year's end, however, the effects of the copper strike, depressed automobile and housing markets, and reduced demand in manufacturing all contributed to the decline in copper, gold, and silver production. The following year (1981) saw employment in Arizona's mines grow substantially as the industry rebounded from low employment levels that resulted, to a great extent, from strikes in 1977 and 1980. Such growth required a severe retrenchment in 1982 however, and in the face of deteriorating market conditions employment was slashed to less than 15,000 by the end of 1982. The value of Arizona non-fuel mineral production declined from the record high $2.6 billion in 1981, to $1.6 billion in 1982 and $1.5 billion in 1983--a 42 percent drop in 3 years.

Amidst increased imports of low-priced copper and consequent increased domestic inventories and depressed prices, the U.S. copper mining industry continued to languish in 1983. A rebound in the domestic economy in 1983 was not accompanied by the same in the world economy. Aside from the U.S., Western World consumption of copper remained severely depressed, yet governments in foreign producing countries encouraged higher production levels to maintain employment and foreign exchange flows. As a consequence, excess supplies were sold in U.S. markets and further depressed prices. Between 1975 and 1983, imports of refined copper increased by 253 percent and concentrates by 241 percent. Chile, currently the world's lowest cost producer, accounted for 56 percent of U.S. imports of refined and blister copper in 1983.

Total employment in Arizona's mining industry is predicted to be slightly more than 10,000 in 1988--representing a decline of nearly 3,000 over four years. However, year-to-year employment fluctuations in the mining industry will continue to result from international volatility of prices and the industry's sensitivity to general business conditions. Issues continuing to face the industry include foreign production subsidies, development bank and International Monetary Fund loans, devaluation of foreign currencies, and continued expansion of foreign copper-producing facilities and production. Domestic factors of concern include the influence of a strong dollar on exports and imports, high interest rates, the renegotiation of labor contracts, and continued expenditures for pollution abatement.

FIGURE 8: NONFUEL MINERAL PRODUCTION IN ARIZONA

Mineral	1981		1982		1983	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
ARIZONA						
Clays thousand short tons	148	$1,105	143	$998	151	$1,425
Copper (recoverable content of ores, etc.) metric tons	1,040,813	1,953,142	r769,521	r1,235,055	678,216	1,144,285
Gem stones	NA	3,250	NA	2,800	NA	2,800
Gold (recoverable content of ores, etc.) troy ounces	100,339	46,120	61,060	22,949	61,991	26,284
Gypsum thousand short tons	213	2,594	175	1,205	265	1,929
Lead (recoverable content of ores, etc.) metric tons	993	800	359	202	144	69
Lime thousand short tons	538	29,913	326	17,080	340	16,700
Molybdenum (content of concentrate) thousand pounds	35,808	254,345	r20,445	r89,928	23,934	79,459
Pumice thousand short tons	1	3	1	7	2	15
Sand and gravel:						
Construction do.	e20,990	e63,340	19,124	58,375	e23,200	e75,000
Industrial do.	179	2,455	107	1,617	W	W
Silver (recoverable content of ores, etc.) thousand troy ounces	8,055	84,728	r6,309	r50,159	4,492	51,383
Stone:						
Crushed thousand short tons	6,315	26,263	e5,200	e22,200	4,755	24,079
Dimension do.	W	578	W	e580	(1)	1
Zinc metric tons	138	135	--	--	--	--
Combined value of asbestos (1981), barite (1981), cement, perlite, pyrites, salt, tungsten ore and concentrate (1981), vanadium (1981), and value indicated by symbol W	XX	93,009	XX	79,105	XX	87,449
Total	XX	2,561,780	XX	r1,582,260	XX	1,510,878

rRevised NA Not available XX Not applicable W Withheld to avoid disclosing company proprietary data
eEstimated
1Less than 1/2 unit

Source: U.S. Department of Interior, Bureau of Mines.

An ever-changing demand for copper will result from worldwide technological and social change. Contributing to a greater demand for copper is the trend to underground power distribution, mass-transit, electric cars, automation, and increased computer use. Resistance of copper alloys to the corrosive effects of seawater, and the metal's high heat transfer properties, make copper ideal for use in distillation processes used in seawater desalinization. Long-term trends inhibiting copper consumption include the substitution of aluminum and copper-clad aluminum for copper microminiaturization of communication circuitry, the use of fiber-optics and satellites in communications, and the metal's relatively high cost.

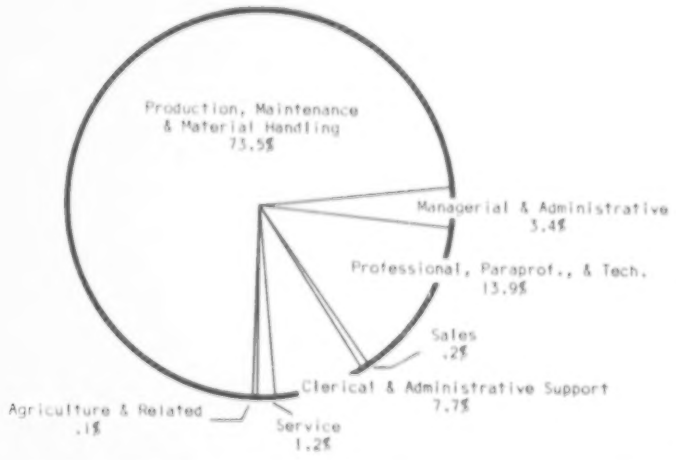
OCCUPATIONAL INFORMATION

OCCUPATIONAL ANALYSIS

Production, maintenance, and material handling occupations dominate the mining industry and constitute an occupational category that represents three of every four mining workers in Arizona. This category encompasses workers with a wide range of skills and responsibilities and includes such numerically prominent occupations as truck drivers, welders, underground loading machine operators, and laborers.

Ranking a distant second and third to the maintenance and production category are professional and technical workers (14 percent) and those in clerical occupations (8 percent). Two of every three professional and technical workers in Arizona's mining industry are engineers and/or

FIGURE 9: OCCUPATIONS IN MINING - MAY 1984


Production, Maintenance & Material Handling 73.5%
Managerial & Administrative 3.4%
Professional, Paraprof., & Tech. 13.9%
Sales .2%
Clerical & Administrative Support 7.7%
Agriculture & Related .1%
Service 1.2%

scientists. Most numerous among the scientists are geologists. These workers help locate mineral deposits and their responsibilities often include the preparation of geologic reports and maps and the interpretation of research data. Mining engineers are primarily involved in determining the location of minerals and ores, and planning their extraction. Metallurgists and metallurgical engineers, on the other hand, investigate properties and treatments of metals to develop new alloys, production methods, and uses for the metals and alloys. Often assisting the geologists and engineers are the chemical technicians, who numbered 150 in May 1984.

FIGURE 10: PROFESSIONAL AND TECHNICAL OCCUPATIONS WITH THE GREATEST EMPLOYMENT

Occupation	Employment May 1984
Geologists and Geophysicists	216
Chemical Technicians and Technologists	152
Metallurgical and Materials Engineers	119
Mining Engineers, Incl. Mine Safety	117
Accountants and Auditors	110
Chemists, Exc. Biochemists	79
Drafters	64

FIGURE 11: OCCUPATIONS WITH THE GREATEST EMPLOYMENT IN ARIZONA'S MINING INDUSTRY

	Employment 1984	Job Openings* 1984-1988
Miscellaneous Helpers & Laborers	740	-73
Truck Drivers, Heavy or Tractor Trailer	591	-91
Welders & Cutters	492	-45
Loading Machine Operators, Underground Mining	491	-46
Electricians	490	-66
First Line Managers/Supervisors-Construction Trades & Extraction Workers	483	-49
Machinery Maintenance Mechanics	463	-94
First Line Managers/Supervisors-Mechanics/ Installers/Repairers	413	-63
Mobile Heavy Equipment Mechanics, Exc. Engines	395	-52
Crushing, Grinding, & Mixing Machine Operators	321	-28
Construction & Extraction Worker Helpers	270	-14
Blasters & Explosives Workers	260	-57
Excavating & Loading Machine Operators	252	-19
Geologists, Geophysicists, & Oceanographers	216	-39
Grader, Dozer, & Scraper Operators	210	-32
Secretaries	207	-10
First Line Managers/Supervisors-Transport Operatives	203	-21
Bus & Truck Mechanics & Diesel Engine Specialists	197	-38
Mechanic & Repairer Helpers	191	-36
Plumbers, Pipefitters, & Steamfitters	187	-38
Separating & Filtering Machine Operators	185	-27
Earth Drillers, Exc. Oil & Gas	184	-6
Bookkeeping, Accounting, & Auditing Clerks	169	-20
Machinery Maintenance Workers	166	-16
Chemical Technicians, Exc. Health	152	-29
Maintenance Repairers, General Utility	152	-29
General Office Clerks	151	-6
Stock Clerks-Stockroom, Warehouse, or Yard	148	-17
Rail-Track Laying & Maintenance Equip. Operators	129	-23
Mining, Quarrying, & Drilling Managers	124	-12

* Does not include turnover.

In the clerical workers category, employment of secretaries; bookkeepers, accounting, and auditing clerks; and general office clerks constitutes one-half of the total.

The occupational employment distribution within each of the four major industry categories (oil and gas extraction, metal, non-metal, and coal mining) is similar to that shown in figure 9--with one exception. With a disproportionate share of managers, engineers, scientists, and technicians, the ranks of professional and technical personnel in oil and gas extraction account for more than 60 percent of the industry's employment. Even less labor intensive than its mining counterparts, only 18 percent are production and maintenance workers as compared to 73 percent for all mining firms.

Predicted declines in mining through 1988 will result in employment losses in nearly all occupations. Production, maintenance, and material handling occupations will, because of their large share of industry employment, experience the greatest employment declines. Compounding losses in this occupational category are technological advances that have yielded increased productivity. Evidence of this evolution is suggested by data presented in figure 12 which reflects mining staffing patterns as determined by each of the three OES surveys since 1978. A declining share of production and maintenance workers is countered by expanding shares of professional and technical workers as well as managerial and clerical personnel. Although their employment will decline during the projection period, professional and technical workers are expected to continue increasing their share of industry employment. Employment of engineers, scientists, and technical workers, for example, will be boosted by more technologically advanced mining systems, compliance with mine health and safety regulations, and reclamation efforts. Exploration and efforts to efficiently mine lower-grade ores will contribute to the demand for these workers, in the long term, as will the processing of these ores into usable metals.

FIGURE 12: OCCUPATIONAL EMPLOYMENT DISTRIBUTION IN ARIZONA'S MINING INDUSTRY

Occupations	1978	1981	1984
Managerial & Administrative	10.2%	10.7%	13.9%
Professional, Paraprof., & Tech.	3.1	3.0	3.4
Sales	.2	.0	.2
Clerical/Administrative Support	5.7	6.5	7.7
Service	2.4	1.4	1.2
Production & Maintenance	79.4	78.4	73.6
Total	100.0%	100.0%	100.0%

Despite employment losses in the industry, job openings will be created as the result of turnover and separations from the labor force. Modest in number, these openings will be especially evident among clerical workers--a category that is characterized by relatively high separation and turnover rates.

OCCUPATIONAL STRUCTURE

The following tables provide employment estimates and projected employment and job openings for the counties and the state. Graham and Greenlee counties have been combined due to their close proximity, similar economies, and size. Tables are not provided for Apache, Coconino, La Paz, Santa Cruz, and Yuma counties as each has insignificant employment in mining. When using the data, please note the following:

1) Employment growth for mines in each of the nonmetropolitan counties reflects the rate calculated for the "balance of state" (Arizona less Maricopa and Pima counties). Projected employment for the mines in Yavapai County, for example, reflects levels that would be attained if these mines were to expand at the rate that is predicted for all mines in the "balance of state."

2) The data reflect full- and part-time wage and salary employment only, and do not include self-employed or unpaid-family workers.

3) Total job openings represent the number of openings due to growth of the industry and separations from the labor force. They do not account for labor turnover, i.e., openings created when a worker changes jobs, leaving the job to be filled by someone else. These vacancies are generally the largest source of job openings.

4) To eliminate the possible disclosure of confidential employer information, occupations have been added to the appropriate "All Other" or residual category if: less than three firms reported a single occupation; one firm reported more than 50 percent of the occupational estimate; two firms combined reported more than 75 percent of the occupational estimate. In certain cases, releases have been obtained from large employers to waive the confidentiality criteria.

5) The projection technique does not possess the degree of accuracy that may be implied by unrounded numbers.

6) Data for occupations with employment of less than five are included in the appropriate "All Other" categories. These occupations are not listed, however, in the summary of "All Other" categories which follows each table.

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

STATEWIDE

	ESTIMATED MAY 1984 EMPLOYMENT	PERCENT OF TOTAL MINING EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	434	3.4	328	-84
Financial Managers	37	.3	30	-7
Personnel, Training, & Labor Relations Mgrs.	35	.3	24	-10
Purchasing Managers	10	.1	4	-6
Marketing, Advertising, & Public Rel. Mgrs.	5	.0	2	-3
Administrative Services Managers	26	.2	15	-10
Mining, Quarrying, & Drilling Managers	124	1.0	103	-12
General Managers & Top Executives	101	.8	77	-20
All Other Managers & Administrators	96	.7	73	-16
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	1,808	13.9	1,343	-375
Management Support Occupations	313	2.4	234	-59
Accountants & Auditors	110	.8	85	-16
Budget Analysts	8	.1	4	-4
All Other Financial Specialists	7	.1	7	0
Purchasing Agents, Exc. Wholesale, Retail, & Farm	56	.4	44	-9
Personnel, Training, & Labor Rel. Specialists	52	.4	38	-12
Compliance & Enforcement Inspectors, Exc. Const.	13	.1	8	-4
All Other Management Support Workers	33	.3	25	-6
	34	.3	23	-8
Engineers & Related Occupations	665	5.1	491	-144
Metallurgical & Materials Engineers	119	.9	86	-31
Mining Engineers, Incl. Mine Safety	117	.9	85	-21
Civil Engineers, Incl. Traffic	11	.1	6	-5
Mechanical Engineers	62	.5	44	-16
All Other Engineers	52	.4	39	-12
Surveying & Mapping Scientists	39	.3	27	-12
Civil Engineering Technicians & Technologists	12	.1	8	-3
Mechanical Engineering Techs.	10	.1	6	-4
Drafters	64	.5	49	-13
Surveying & Mapping Techs.	44	.3	37	-7
All Other Engineering & Related Technicians	135	1.0	104	-20
Natural Scientists & Related Workers	516	4.0	394	-98
Chemists, Exc. Biochemists	79	.6	55	-17
Geologists, Geophysicists, & Oceanographers	216	1.7	173	-39
All Other Physical Scientists	10	.1	6	-4
Foresters & Conservation Scientists	11	.1	13	2
All Other Life Scientists	2	.0	2	0
Chemical Techs., Exc. Health	152	1.2	111	-29
All Other Physical & Life Science Techs.	46	.4	34	-11
Computer, Math, Research, & Related Occupations	113	.9	82	-31
Systems Analysts, Electronic Data Processing	49	.4	38	-11
Computer Programmers	49	.4	35	-14
Computer Programmer Aides	13	.1	8	-5
All Mathematical Scientists	2	.0	1	-1
All Legal Assistants/Techs., Exc. Clerical	2	.0	1	-1
Health Practioners, Techs., & Related Occupations	80	.6	52	-17
Registered Nurses	38	.3	25	-8
All Other Health Professionals, Paraprofessionals, & Technicians	42	.3	27	-9
Other Professional, Paraprofessional, & Related	119	.9	89	-25
SALES & RELATED OCCUPATIONS	32	.2	25	-6
First Line Supervisors & Managers - Sales	17	.1	13	-3
All Other Sales & Related Workers	15	.1	12	-3

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

STATEWIDE (CONTD.)

	ESTIMATED MAY 1984 EMPLOYMENT	PERCENT OF TOTAL MINING EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	TOTAL JOB OPENINGS 1984-1988
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	1,000	7.7	750	-141
First Line Supers.-Clerical & Admin. Support	71	.5	55	-10
Secretaries	207	1.6	163	-10
Receptionists & Information Clerks	14	.1	8	-6
Typists	16	.1	10	-4
Typists, Word Processing Equipment	11	.1	8	-3
Personnel Clerks, Exc. Payroll & Timekeeping	22	.2	14	-5
File Clerks	7	.1	5	-1
Bookkeeping, Accounting, & Auditing Clerks	169	1.3	127	-20
Payroll & Timekeeping Clerks	36	.3	24	-9
Billing, Cost & Rate Clerks	11	.1	6	-5
General Office Clerks	151	1.2	121	-6
Computer Operators, Exc. Peripheral Equipment	25	.2	16	-9
Data Entry Keyers, Exc. Composing	24	.2	16	-8
All Other Office Machine Operators	3	.0	1	-2
Switchboard Operators	12	.1	6	-6
Production, Planning, & Expediting Clerks	12	.1	7	-4
Weighers/Measurers/Checkers-Recordkeeping	35	.3	25	-9
Stock Clerks - Stockroom, Warehouse, or Yard	148	1.1	119	-17
All Other Material Recording/Scheduling/Dist.	12	.1	8	-4
All Other Clerical & Administrative Support	14	.1	11	-3
SERVICE OCCUPATIONS	161	1.2	115	-39
First Line Supers. & Mgrs./Supers. - Service	6	.0	3	-3
Guards & Watch Guards	97	.7	72	-23
All Food Service Workers	3	.0	0	-3
Janitors & Cleaners, Exc. Maids & Housekeeping	48	.4	35	-8
All Other Cleaning/Building Service, Exc. Private House	2	.0	2	0
All Other Service Workers	5	.0	3	-2
AGRICULTURAL, FORESTRY, & RELATED OCCUPATIONS	16	.1	17	2
Gardeners & Groundskeepers, Exc. Farm	11	.1	11	1
All Other Agri., Forestry, Fishing, & Related	5	.0	6	1
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	9,561	73.5	7,506	-1,323
First Line Supervisors & Manager/Supervisors	1,212	9.3	925	-147
First Line Managers/Supervisors - Mechanics/ Installers/Repairers	413	3.2	299	-63
First Line Managers/Supervisors - Construction Trades & Extraction Workers	483	3.7	395	-49
First Line Mgrs./Supers. - Transport. Operatives	203	1.6	149	-21
First Line Mgrs./Supers. - Laborers & Helpers	78	.6	57	-9
All Other First Line Managers/Supervisors - Maintenance/Production/Construction	35	.3	25	-5
Inspectors & Related Occupations	69	.5	48	-17
Mechanics, Installers, & Repairers	1,630	12.5	1,248	-283
Underground Mine Machinery Mechanics	169	1.3	132	-24
All Other Machinery Maintenance Mechanics	294	2.3	211	-70
Millwrights	20	.2	14	-4
Machinery Maintenance Workers	166	1.3	135	-16
Maintenance Repairers, General Utility	152	1.2	114	-29
Automotive Mechanics	55	.4	38	-15
Bus & Truck Mechs., & Diesel Eng. Specialists	197	1.5	147	-38
Mobile Heavy Equip. Mechanics, Exc. Engines	395	3.0	326	-52
Rail Car Repairers	70	.5	49	-12
Riggers	27	.2	19	-6
All Other Mechanics, Installers, & Repairers	85	.7	63	-17
Construction Trades & Extraction	1,661	12.8	1,288	-248
Carpenters	50	.4	35	-12

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

STATEWIDE (CONTD.)

	ESTIMATED MAY 1984 EMPLOYMENT	PERCENT OF TOTAL MINING EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	TOTAL JOB OPENINGS 1984-1988
Electricians	490	3.8	383	-66
Painters & Paperhangers - Construction & Maintenance	21	.2	14	-6
Plumbers, Pipefitters, & Steamfitters	187	1.4	134	-38
Rail-Track Laying & Maintenance Equip. Opers.	129	1.0	92	-23
All Other Construction Trades Workers	6	.0	3	-3
Earth Drillers, Exc. Oil & Gas	184	1.4	170	-6
Blasters & Explosives Workers	260	2.0	188	-57
Roof Bolters	67	.5	49	-11
Continuous Mining Machine Operators	41	.3	30	-7
Mine Cutting & Channeling Machine Operators	117	.9	87	-19
All Other Mining Machine Operators	56	.4	41	-11
All Other Extractive Workers, Exc. Helpers	53	.4	62	11
Precision Production Occupations	106	.8	75	-24
Machinists	98	.7	70	-21
All Other Precision Workers	8	.1	5	-3
Machine Setters, Operators, & Tenders	626	4.8	492	-82
All Metal & Plastic Machine Operators	2	.0	1	-1
Furnace, Kiln, Oven, Drier, or Kettle Operators	78	.6	58	-12
Boiler Operators & Tenders, Low Pressure	13	.1	8	-5
Cleaning, Washing, & Pickling Equipment Operators	15	.1	11	-4
Separating & Filtering Machine Operators	185	1.4	141	-27
Crushing, Grinding, & Mixing Machine Operators	321	2.5	266	-28
All Other Machine Operators & Tenders	12	.1	7	-5
Hand Working Occupations, Inc. Assemblers & Fabricators	657	5.0	529	-74
Welders & Cutters	492	3.8	409	-45
Solderers & Brazers	5	.0	3	-2
All Other Hand Workers	160	1.2	117	-27
Plant & System Occupations	139	1.1	103	-24
Stationary Engineers	123	.9	93	-19
All Other Plant & System Operators	16	.1	10	-5
Transportation & Material Moving Workers	2,236	17.2	1,808	-302
Truck Drivers, Heavy or Tractor Trailer	591	4.5	470	-91
Truck Drivers, Light - Incl. Delivery & Route	18	.1	11	-7
Rail Yard Engineers, Dinkey Opers. & Hostlers	19	.1	12	-5
Railroad Brake, Signal, & Switch Operators	26	.2	17	-9
All Other Rail Vehicle Opers. & Controllers	37	.3	25	-10
All Other Transportation & Related Workers	108	.8	79	-19
Excavating & Loading Machine Operators	252	1.9	215	-19
Loading Machine Operators, Underground Mining	491	3.8	425	-46
Shuttle Car Operators	44	.3	32	-8
Grader, Dozer, & Scraper Operators	210	1.6	159	-32
Hoist & Winch Operators	20	.2	15	-5
Crane & Tower Operators	116	.9	84	-27
Industrial Truck & Tractor Operators	51	.4	36	-14
Conveyor Operators & Tenders	79	.6	89	17
Pump Operators	25	.2	18	-7
Operating Engineers	89	.7	77	-8
All Other Material Moving Equipment Operators	60	.5	44	-12
Helpers, Laborers, & Material Movers, Hand	1,225	9.4	990	-122
Mechanic & Repairer Helpers	191	1.5	137	-36
Construction & Extraction Worker Helpers	270	2.1	234	-14
Freight, Stock, & Material Movers, Hand	24	.2	24	1
All Other Helpers & Laborers	740	5.7	595	-73
TOTAL ALL OCCUPATIONS	13,012	100.0	10,084	1,966

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

STATEWIDE (CONTD.)

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Other Engineers
Petroleum Engineers

All Other Health Professionals,
Paraprofessionals, & Technicians
Licensed Practical Nurses

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Other Mining Machine Operators
Paving, Surfacing, & Tamping Equip. Opers.

All Other Extractive Workers, Exc. Helpers
Rock Splitters, Quarry

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

COCHISE COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	8	8	0	0	0
Mining, Quarrying, & Drilling Managers	5	5	0	0	0
All Other Managers & Administrators	3	3	0	0	0
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	17	18	1	0	1
All Financial Specialists	1	1	0	0	0
All Other Management Support Workers	2	2	0	0	0
All Engineers	2	2	0	0	0
All Physical Scientists	3	3	0	0	0
All Physical & Life Science Techs.	9	10	1	0	1
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	6	6	0	0	0
Secretaries	2	2	0	0	0
All Office Machine Operators	1	1	0	0	0
All Other Clerical & Administrative Support	3	3	0	0	0
SERVICE OCCUPATIONS	5	5	0	0	0
All Protective Service Workers	3	3	0	0	0
All Cleaning/Building Service, Exc. Private House	2	2	0	0	0
AGRICULTURAL, FORESTRY, & RELATED OCCUPATIONS	7	8	1	1	2
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	169	196	27	10	37
All First Line Managers/Supervisors - Maintenance/Production/Construction	5	5	0	0	0
All Mechanics, Installers, & Repairers	6	6	0	0	0
All Mining Machine Operators	4	4	0	0	0
All Other Extractive Workers, Exc. Helpers	4	4	0	0	0
All Other Machine Operators & Tenders	30	36	6	2	8
All Motor Vehicle Operators	5	6	1	0	1
All Other Material Moving Equipment Operators	60	70	10	3	13
All Helpers & Laborers	55	65	10	5	15
TOTAL ALL OCCUPATIONS	212	241	29	11	40

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Physical & Life Science Techs.
Chemical Techs., Exc. Health

AGRICULTURAL, FORESTRY, & RELATED OCCUPATIONS

Gardeners & Groundskeepers, Exc. Farm

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Other Machine Operators & Tenders
Separating & Filtering Machine Operators
Crushing, Grinding, & Mixing Machine Operators

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING (CONTD.)

All Motor Vehicle Operators
Truck Drivers, Heavy or Tractor Trailer

All Other Material Moving Equipment Operators
Excavating & Loading Machine
Loading Machine Operators, Underground
Operating Engineers

All Helpers & Laborers
Construction & Extraction Worker Helpers

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

GILA COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	54	35	-19	3	-16
Personnel, Training, & Labor Relations Mgrs.	8	5	-3	0	-3
Mining, Quarrying, & Drilling Managers	14	10	-4	1	-3
General Managers & Top Executives	7	5	-2	0	-2
All Other Managers & Administrators	25	15	-10	2	-8
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	228	150	-78	11	-67
Accountants & Auditors	16	11	-5	2	-3
All Other Financial Specialists	2	1	-1	0	-1
Cost Estimators	9	6	-3	1	-2
All Other Management Support Workers	14	8	-6	0	-6
Metallurgical & Materials Engineers	17	12	-5	0	-5
Mining Engineers, Incl. Mine Safety	15	10	-5	2	-3
All Other Engineers	26	17	-9	1	-8
Surveying & Mapping Scientists	7	5	-2	0	-2
Surveying & Mapping Techs.	9	6	-3	0	-3
All Other Engineering & Related Technicians	13	8	-5	0	-5
Geologists, Geophysicists, & Oceanographers	16	10	-6	0	-6
All Other Physical Scientists	12	8	-4	1	-3
Chemical Techs., Exc. Health	49	35	-14	4	-10
All Other Physical & Life Science Techs.	2	1	-1	0	-1
Systems Analysts, Electronic Data Processing	5	3	-2	0	-2
Computer Programmers	10	7	-3	0	-3
All Health Professionals, Paraprofessionals, & Technicians	3	1	-2	0	-2
All Other Professional, Paraprofessional, & Technical Workers	3	1	-2	0	-2
SALES & RELATED OCCUPATIONS	14	9	-5	1	-4
First Line Supervisors & Managers - Sales	8	5	-3	1	-2
All Other Sales & Related Workers	6	4	-2	0	-2
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	158	107	-51	19	-32
First Line Supers.-Clerical & Admin. Support	17	12	-5	3	-2
Secretaries	17	11	-6	3	-3
Personnel Clerks, Exc. Payroll & Timekeeping	11	8	-3	2	-1
Bookkeeping, Accounting, & Auditing Clerks	6	4	-2	1	-1
Billing, Cost & Rate Clerks	5	3	-2	0	-2
General Office Clerks	32	23	-9	6	-3
All Office Machine Operators	4	2	-2	0	-2
All Communication Equipment Operators	3	2	-1	0	-1
Production, Planning, & Expediting Clerks	5	3	-2	0	-2
Weighers/Measurers/Checkers - Recordkeeping	13	9	-4	1	-3
Stock Clerks - Stockroom, Warehouse, or Yard	27	19	-8	2	-6
All Other Material Recording/Scheduling/Dist.	5	3	-2	0	-2
All Other Clerical & Administrative Support	13	8	-5	1	-4
SERVICE OCCUPATIONS	15	10	-5	0	-5
All Service Supervisors & Managers	3	2	-1	0	-1
Guards & Watch Guards	7	5	-2	0	-2
Janitors & Cleaners, Exc. Maids & Housekeeping	5	3	-2	0	-2
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	1,345	966	-379	106	-273
First Line Managers/Supervisors - Mechanics/ Installers/Repairers	65	47	-18	8	-10
First Line Mgrs./Supers. - Transport. Operatives	19	13	-6	3	-3
First Line Mgrs./Supers. - Laborers & Helpers	54	39	-15	9	-6
All Other First Line Managers/Supervisors - Maintenance/Production/Construction	53	38	-15	5	-10
All Inspectors, Testers, & Related	4	2	-2	0	-2
All Machinery Maintenance Mechanics	65	46	-19	3	-16
Maintenance Repairers, General Utility	6	4	-2	0	-2
Bus & Truck Mechs., & Diesel Eng. Specialists	29	21	-8	2	-6

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

GILA COUNTY (CONTD.)

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
Mobile Heavy Equip. Mechanics, Exc. Engines	68	49	-19	3	-16
Rail Car Repairers	5	3	-2	0	-2
Riggers	11	8	-3	1	-2
All Other Mechanics, Installers, & Repairers	65	47	-18	6	-12
Carpenters	19	13	-6	2	-4
Electricians	81	59	-22	7	-15
Plumbers, Pipefitters, & Steamfitters	51	37	-14	4	-10
All Other Construction Trades Workers	5	3	-2	0	-2
Earth Drillers, Exc. Oil & Gas	12	8	-4	0	-4
Blasters & Explosives Workers	5	3	-2	0	-2
All Other Extraction Workers, Exc. Helpers	10	9	-1	0	-1
Machinists	30	21	-9	2	-7
All Other Precision Workers	8	5	-3	0	-3
Cleaning, Washing, & Pickling Equipment Opers.	6	4	-2	0	-2
Separating & Filtering Machine Operators	60	43	-17	6	-11
Crushing, Grinding, & Mixing Machine Operators	91	67	-24	9	-15
All Other Machine Operators & Tenders	4	2	-2	0	-2
Welders & Cutters	68	49	-19	5	-14
All Plant & System Operators	7	5	-2	0	-2
Truck Drivers, Heavy or Tractor Trailer	135	101	-34	8	-26
Truck Drivers, Light - Incl. Delivery & Route	14	10	-4	0	-4
Railroad Brake, Signal, & Switch Operators	7	5	-2	0	-2
All Other Rail Vehicle Opers. & Controllers	5	3	-2	0	-2
Excavating & Loading Machine Operators	19	13	-6	1	-5
Crane & Tower Operators	9	6	-3	0	-3
Pump Operators	5	3	-2	0	-2
Operating Engineers	6	4	-2	0	-2
All Other Material Moving Equipment Operators	102	73	-29	8	-21
All Other Helpers & Laborers	142	103	-39	14	-25
TOTAL ALL OCCUPATIONS	1,814	1,277	-537	140	-397

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Other Management Support Workers
Personnel, Training, & Labor Rel. Specialists

All Other Engineers
Mechanical Engineers

All Other Physical Scientists
Chemists, Exc. Biochemists

CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS

All Other Clerical & Administrative Support
Payroll & Timekeeping Clerks

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Other First Line Managers/Supervisors -
Maintenance/Production/Construction

PRODUCTION, MAINTENANCE, MATERIAL HANDLING (CONTD.)

First Line Managers/Supervisors - Construction
Trades and Extraction Workers

All Other Mechanics, Installers, & Repairers
Machinery Maintenance Workers

All Other Extraction Workers, Exc. Helpers
Rock Splitters, Quarry

All Plant & System Operators
Stationary Engineers

All Other Material Moving Equipment Operators
Grader, Dozer, & Scraper Operators

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

GRAHAM & GREENLEE COUNTIES

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	16	7	-9	0	-9
All Managers & ministrators	16	7	-9	0	-9
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	206	135	-71	10	-61
Accountants & Auditors	8	5	-3	0	-3
All Other Financial Specialists	2	1	-1	0	-1
Personnel, Training, & Labor Rel. Specialists	12	8	-4	1	-3
Compliance & Enforcement Inspectors, Exc. Const.	13	8	-5	1	-4
All Other Management Support Workers	4	2	-2	0	-2
Metallurgical & Materials Engineers	10	7	-3	0	-3
Mining Engineers, Incl. Mine Safety	7	4	-3	0	-3
All Other Engineers	4	2	-2	0	-2
Surveying & Mapping Techs.	12	8	-4	0	-4
All Other Engineering & Related Technicians	20	13	-7	1	-6
Chemists, Exc. Biochemists	6	4	-2	0	-2
Geologists, Geophysicists, & Oceanographers	6	3	-3	0	-3
All Other Physical Scientists	5	3	-2	0	-2
Chemical Techs., Exc. Health	8	5	-3	0	-3
All Other Physical & Life Science Techs.	4	2	-2	0	-2
Systems Analysts, Electronic Data Processing	7	5	-2	0	-2
Registered Nurses	18	13	-5	3	-2
All Other Health Professionals, Paraprofessionals, & Technicians	5	3	-2	1	-1
All Other Professional, Paraprofessional, & Technical Workers	55	39	-16	3	-13
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	98	63	-35	13	-22
Secretaries	27	19	-8	5	-3
Bookkeeping, Accounting, & Auditing Clerks	49	35	-14	8	-6
All Office Machine Operators	3	1	-2	0	-2
All Communication Equipment Operators	1	0	-1	0	-1
All Material Recording/Scheduling/Dist.	8	4	-4	0	-4
All Other Clerical & Administrative Support	10	4	-6	0	-6
SERVICE OCCUPATIONS	49	33	-16	4	-12
Guards & Watch Guards	29	20	-9	1	-8
All Food Service Workers	1	0	-1	0	-1
Janitors & Cleaners, Exc. Maids & Housekeeping	19	13	-6	3	-3
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	1,385	992	-393	126	-267
First Line Managers/Supervisors - Mechanics/ Installers/Repairers	82	59	-23	10	-13
First Line Mgrs./Supers. - Transport. Operatives	99	72	-27	17	-10
First Line Mgrs./Supers. - Laborers & Helpers	8	5	-3	1	-2
All Machinery Maintenance Mechanics	17	11	-6	0	-6
Maintenance Repairers, General Utility	70	51	-19	5	-14
Automotive Mechanics	28	20	-8	1	-7
Bus & Truck Mechs., & Diesel Eng. Specialists	47	34	-13	3	-10
Mobile Heavy Equip. Mechanics, Exc. Engines	47	34	-13	2	-11
Rail Car Repairers	20	14	-6	3	-3
Carpenters	5	3	-2	0	-2
Electricians	65	47	-18	5	-13
Plumbers, Pipefitters, & Steamfitters	12	8	-4	1	-3
Rail-Track Laying & Maintenance Equip. Opers.	66	48	-18	8	-10
All Other Construction Trades Workers	3	2	-1	0	-1
Earth Drillers, Exc. Oil & Gas	28	20	-8	1	-7
Blasters & Explosives Workers	16	11	-5	1	-4
Mine Cutting & Channeling Machine Operators	32	23	-9	3	-6
All Precision Metal Workers	3	1	-2	0	-2
Welders & Cutters	97	70	-27	7	-20
Stationary Engineers	62	45	-17	6	-11
Truck Drivers, Heavy or Tractor Trailer	69	50	-19	4	-15
All Rail Vehicle Opers. & Related Workers	15	9	-6	0	-6

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

GRAHAM & GREENLEE COUNTIES (CONTD.)

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
All Other Transportation & Related Workers	72	52	-20	7	-13
Excavating & Loading Machine Operators	30	21	-9	3	-6
Grader, Dozer, & Scraper Operators	32	22	-10	3	-7
Crane & Tower Operators	18	13	-5	1	-4
Industrial Truck & Tractor Operators	8	5	-3	0	-3
All Other Material Moving Equipment Operators	2	0	-2	0	-2
Mechanic & Repairer Helpers	117	85	-32	12	-20
All Other Helpers & Laborers	215	157	-58	22	-36
TOTAL ALL OCCUPATIONS	1,754	1,230	-524	153	-371

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

MARICOPA COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	50	50	0	0	0
Financial Managers	10	10	0	0	0
General Managers & Top Executives	18	18	0	0	0
All Other Managers & Administrators	22	22	0	0	0
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	151	154	3	4	7
Accountants & Auditors	22	23	1	2	3
All Other Financial Specialists	7	7	0	0	0
All Other Management Support Workers	18	19	1	1	2
All Engineers	26	26	0	0	0
Drafters	17	18	1	1	2
All Other Engineering & Related Technicians	4	4	0	0	0
All Physical Scientists	16	16	0	0	0
All Other Professional, Paraprofessional, & Technical Workers	41	41	0	0	0
SALES & RELATED OCCUPATIONS	8	8	0	0	0
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	103	104	1	10	11
Secretaries	37	38	1	7	8
Typists, Word Processing Equipment	5	5	0	0	0
General Office Clerks	20	20	0	3	3
All Office Machine Operators	2	2	0	0	0
All Communication Equipment Operators	2	2	0	0	0
All Material Recording/Scheduling/Dist.	5	5	0	0	0
All Other Clerical & Administrative Support	32	32	0	0	0
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	153	156	3	3	6
First Line Managers/Supervisors - Construction Trades & Extraction Workers	24	25	1	1	2
All Machinery Maintenance Mechanics	1	1	0	0	0
Mobile Heavy Equip. Mechanics, Exc. Engines	5	5	0	0	0
All Other Mechanics, Installers, & Repairers	15	15	0	0	0
All Construction Trades Workers	2	2	0	0	0
All Mining Machine Operators	15	15	0	0	0
Crushing, Grinding, & Mixing Machine Operators	24	25	1	1	2
All Hand Workers	2	2	0	0	0
Truck Drivers, Heavy or Tractor Trailer	20	21	1	0	1
All Other Motor Vehicle Operators	1	1	0	0	0
Excavating & Loading Machine Operators	20	20	0	1	1
All Other Material Moving Equipment Operators	9	9	0	0	0
All Other Helpers & Laborers	15	15	0	0	0
TOTAL ALL OCCUPATIONS	465	472	7	17	24

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Other Management Support Workers
Purchasing Agents, Exc. Wholesale, Retail, & Farm

All Engineers
Metallurgical & Materials Engineers
Petroleum Engineers
Mechanical Engineers

All Physical Scientists
Geologists, Geophysicists, & Oceanographers

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL (CONTD.)

All Other Professional, Paraprofessional, & Technical Workers
Computer Programmers

SALES & RELATED OCCUPATIONS

Other Sales Representatives, Exc. Retail

CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS

All Other Clerical & Administrative Support
Bookkeeping, Accounting, & Auditing Clerks

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

MARICOPA COUNTY (CONTD.)

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Mining Machine Operators
Paving, Surfacing, & Tamping Equip. Opers.
Furnace, Kiln, Oven, Drier, or Kettle Opers.

All Other Material Moving Equipment Operators
Hoist & Winch Operators

All Other Helpers & Laborers
Construction & Extraction Worker Helpers

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

MOHAVE COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	7	7	0	0	0
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	35	39	4	0	4
All Financial Specialists	1	1	0	0	0
All Other Management Support Workers	2	2	0	0	0
All Engineers	4	4	0	0	0
All Engineering & Related Technicians	8	9	1	0	1
All Physical Scientists	14	16	2	0	2
All Physical & Life Science Techs.	6	7	1	0	1
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	14	14	0	0	0
Secretaries	4	4	0	0	0
All Material Recording/Scheduling/Dist.	4	4	0	0	0
All Other Clerical & Administrative Support	6	6	0	0	0
SERVICE OCCUPATIONS	6	6	0	0	0
Guards & Watch Guards	6	6	0	0	0
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	141	160	19	3	22
First Line Managers/Supervisors - Construction Trades & Extraction Workers	12	14	2	0	2
All Machinery Maintenance Mechanics	12	14	2	1	3
All Other Mechanics, Installers, & Repairers	16	17	1	0	1
All Construction Trades Workers	8	9	1	0	1
All Extractive Workers, Except Helpers	56	66	10	2	12
All Machine Operators & Tenders	5	5	0	0	0
All Hand Workers	8	9	1	0	1
All Motor Vehicle Operators	4	4	0	0	0
All Other Transportation & Moving Equipment Operators	12	13	1	0	1
All Other Helpers & Laborers	8	9	1	0	1
TOTAL ALL OCCUPATIONS	203	226	23	3	26

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Engineering & Related Technicians
Surveying & Mapping Techs.

All Physical Scientists
Geologists, Geophysicists, & Oceanographers

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Machinery Maintenance Mechanics
Underground Mine Machinery Mechanics

All Other Mechanics, Installers, & Repairers
Bus & Truck Mechs., & Diesel Eng. Specialists
Mobile Heavy Equip. Mechanics, Exc. Engines

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING (CONTD.)

All Construction Trades Workers
Electricians

All Extractive Workers, Exc. Helpers
Earth Drillers, Exc. Oil & Gas
Mine Cutting & Channeling Machine Operators

All Hand Workers
Welders & Cutters

All Other Transportation & Moving Equip. Operators
Excavating & Loading Machine Operators

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

NAVAJO COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	38	44	6	2	8
Financial Managers	5	6	1	0	1
Mining, Quarrying, & Drilling Managers	21	25	4	2	6
All Other Managers & Administrators	12	13	1	0	1
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	90	101	11	2	13
All Financial Specialists	4	4	0	0	0
Compliance & Enforcement Inspectors, Exc. Const.	6	7	1	0	1
All Other Management Support Workers	8	8	0	0	0
Mining Engineers, Incl. Mine Safety	5	6	1	0	1
All Other Engineers	4	4	0	0	0
Surveying & Mapping Techs.	10	12	2	0	2
All Other Engineering & Related Technicians	19	23	4	2	6
All Physical Scientists	4	4	0	0	0
Foresters & Conservation Scientists	11	13	2	0	2
All Other Life Scientists	2	2	0	0	0
All Other Physical & Life Science Techs.	5	5	0	0	0
All Mathematical Scientists	1	1	0	0	0
All Health Professionals, Paraprofessionals, & Technicians	2	2	0	0	0
All Other Professional, Paraprofessional, & Technical Workers	9	10	1	0	1
SALES & RELATED OCCUPATIONS	1	1	0	0	0
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	88	101	13	9	22
First Line Supers.-Clerical & Admin. Support	11	13	2	1	3
Secretaries	11	12	1	1	2
Bookkeeping, Accounting, & Auditing Clerks	6	7	1	1	2
General Office Clerks	15	17	2	3	5
All Office Machine Operators	4	4	0	0	0
Stock Clerks - Stockroom, Warehouse, or Yard	32	38	6	3	9
All Other Material Recording/Scheduling/Dist.	2	2	0	0	0
All Other Clerical & Administrative Support	7	8	1	0	1
SERVICE OCCUPATIONS	5	6	1	0	1
Janitors & Cleaners, Exc. Maids & Housekeeping	5	6	1	0	1
AGRICULTURAL, FORESTRY, & RELATED OCCUPATIONS	6	7	1	0	1
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	873	1,043	170	68	238
First Line Managers/Supervisors - Construction Trades & Extraction Workers	62	75	13	6	19
First Line Mgrs./Supers. - Transport. Operatives	9	10	1	1	2
First Line Mgrs./Supers. - Laborers & Helpers	7	8	1	1	2
All Other First Line Managers/Supervisors - Maintenance/Production/Construction	5	5	0	0	0
Production Inspectors, Testers, & Graders	5	6	1	0	1
Underground Mine Machinery Mechanics	11	13	2	1	3
Machinery Maintenance Workers	31	37	6	3	9
Mobile Heavy Equip. Mechanics, Exc. Engines	78	94	16	4	20
All Other Mechanics, Installers, & Repairers	11	12	1	0	1
Electricians	53	64	11	5	16
Earth Drillers, Exc. Oil & Gas	69	83	14	5	19
Rock Splitters, Quarry	3	3	0	0	0
Machinists	5	6	1	0	1
All Other Machine Operators & Tenders	4	4	0	0	0
Welders & Cutters	107	129	22	10	32
Stationary Engineers	11	13	2	1	3
Truck Drivers, Heavy or Tractor Trailer	22	25	3	0	3
All Other Transportation & Related Workers	4	4	0	0	0
Excavating & Loading Machine Operators	37	44	7	3	10
Loading Machine Operators, Underground Mining	113	137	24	5	29

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

NAVAJO COUNTY (CONTD.)

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
Grader, Dozer, & Scraper Operators	20	24	4	2	6
Conveyor Operators & Tenders	68	81	13	7	20
Construction & Extraction Worker Helpers	51	61	10	5	15
Freight, Stock, & Material Movers, Hand	10	12	2	1	3
All Other Helpers & Laborers	77	93	16	8	24
TOTAL ALL OCCUPATIONS	1,101	1,303	202	81	283

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Other Mechanics, Installers, & Repairers
Bus & Truck Mechs., & Diesel Eng. Specialists

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

PIMA COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	179	120	-59	15	-44
Financial Managers	11	7	-4	0	-4
Personnel, Training, & Labor Relations Mgrs.	12	8	-4	1	-3
Administrative Services Managers	12	7	-5	1	-4
Mining, Quarrying, & Drilling Managers	51	35	-16	5	-11
General Managers & Top Executives	47	31	-16	4	-12
All Other Managers & Administrators	46	32	-14	4	-10
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	781	538	-243	49	-194
Accountants & Auditors	45	32	-13	5	-8
All Other Financial Specialists	4	2	-2	0	-2
Purchasing Agents, Exc. Wholesale, Retail, & Farm	19	13	-6	2	-4
Personnel, Training, & Labor Rel. Specialists	18	13	-5	1	-4
Compliance & Enforcement Inspectors, Exc. Const.	13	9	-4	1	-3
All Other Management Support Workers	29	19	-10	3	-7
Metallurgical & Materials Engineers	55	39	-16	2	-14
Mining Engineers, Incl. Mine Safety	51	36	-15	6	-9
Mechanical Engineers	19	13	-6	1	-5
All Other Engineers	11	6	-5	0	-5
Surveying & Mapping Scientists	22	15	-7	0	-7
Drafters	30	20	-10	1	-9
Surveying & Mapping Techs.	8	5	-3	0	-3
All Other Engineering & Related Technicians	92	64	-28	8	-20
Chemists, Exc. Biochemists	39	28	-11	4	-7
Geologists, Geophysicists, & Oceanographers	114	83	-31	4	-27
All Other Physical Scientists	4	2	-2	0	-2
Chemical Techs., Exc. Health	73	52	-21	7	-14
All Other Physical & Life Science Techs.	29	20	-9	1	-8
Systems Analysts, Electronic Data Processing	20	14	-6	0	-6
Computer Programmers	21	12	-9	0	-9
Computer Programmer Aides	7	4	-3	0	-3
All Mathematical Scientists	1	0	-1	0	-1
All Legal Assistants/Techs., Exc. Clerical	1	0	-1	0	-1
All Health Professionals, Paraprofessionals, & Technicians	13	8	-5	1	-4
All Other Professional, Paraprofessional, & Technical Workers	43	29	-14	2	-12
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	336	220	-116	41	-75
First Line Supers.-Clerical & Admin. Support	15	10	-5	1	-4
Secretaries	88	62	-26	17	-9
Receptionists & Information Clerks	7	3	-4	0	-4
Personnel Clerks, Exc. Payroll & Timekeeping	5	3	-2	1	-1
Bookkeeping, Accounting, & Auditing Clerks	56	37	-19	8	-11
Payroll & Timekeeping Clerks	12	7	-5	1	-4
General Office Clerks	49	34	-15	8	-7
Computer Operators, Exc. Peripheral Equipment	15	9	-6	0	-6
Data Entry Keyers, Exc. Composing	15	10	-5	0	-5
Switchboard Operators	5	2	-3	0	-3
Stock Clerks - Stockroom, Warehouse, or Yard	32	22	-10	3	-7
All Other Material Recording/Scheduling/Dist.	16	10	-6	1	-5
All Other Clerical & Administrative Support	21	11	-10	1	-9
SERVICE OCCUPATIONS	47	31	-16	3	-13
All Service Supervisors & Managers	2	1	-1	0	-1
Guards & Watch Guards	31	21	-10	1	-9
All Food Service Workers	1	0	-1	0	-1
Janitors & Cleaners, Exc. Maids & Housekeeping	13	9	-4	2	-2
AGRICULTURAL, FORESTRY, & RELATED OCCUPATIONS	1	0	-1	0	-1

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

PIMA COUNTY (CONTD.)

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	2,003	1,410	-593	155	-438
First Line Managers/Supervisors - Mechanics/ Installers/Repairers	125	90	-35	16	-19
First Line Managers/Supervisors - Construction Trades & Extraction Workers	114	80	-34	10	-24
First Line Mgrs./Supers. - Transport. Opers.	43	31	-12	7	-5
First Line Mgrs./Supers. - Laborers & Helpers	8	5	-3	1	-2
Production Inspectors, Testers, & Graders	27	18	-9	2	-7
All Other Inspectors, Testers, & Related	4	2	-2	0	-2
All Machinery Maintenance Mechanics	202	146	-56	10	-46
Machinery Maintenance Workers	26	18	-8	2	-6
Maintenance Repairers, General Utility	38	27	-11	3	-8
Bus & Truck Mechs., & Diesel Eng. Specialists	37	26	-11	2	-9
Mobile Heavy Equip. Mechanics, Exc. Engines	101	71	-30	5	-25
All Other Mechanics, Installers, & Repairers	30	20	-10	2	-8
Carpenters	7	5	-2	0	-2
Electricians	93	66	-27	8	-19
All Other Construction Trades Workers	7	4	-3	0	-3
Earth Drillers, Exc. Oil & Gas	37	26	-11	2	-9
Blasters & Explosives Workers	12	7	-5	0	-5
All Mining Machine Operators	44	31	-13	4	-9
Machinists	23	15	-8	2	-6
All Other Metal & Plastic Machine Operators	11	7	-4	0	-4
Separating & Filtering Machine Operators	79	57	-22	8	-14
All Other Machine Operators & Tenders	108	76	-32	10	-22
Welders & Cutters	177	127	-50	14	-36
All Plant & System Operators	44	30	-14	4	-10
Truck Drivers, Heavy or Tractor Trailer	169	121	-48	10	-38
All Other Motor Vehicle Operators	2	0	-2	0	-2
All Rail Vehicle Opers. & Controllers	11	6	-5	0	-5
All Other Transportation & Related Workers	32	23	-9	3	-6
Excavating & Loading Machine Operators	54	38	-16	5	-11
Grader, Dozer, & Scraper Operators	47	33	-14	4	-10
Crane & Tower Operators	13	9	-4	0	-4
All Other Transportation & Moving Equipment Operators	56	38	-18	2	-16
Mechanic & Repairer Helpers	54	38	-16	5	-11
All Other Helpers & Laborers	168	119	-49	14	-35
TOTAL ALL OCCUPATIONS	3,347	2,319	-1,028	263	-765

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Other Engineering & Related Technicians
Civil Engineering Technicians & Technologists
Mechanical Engineering Techs.

All Health Professionals,
Paraprofessionals, & Technicians
Registered Nurses

CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS

All Other Material Recording/Scheduling/Dist.
Production, Planning, & Expediting Clerks
Weighers, Measurers, Checkers, & Samplers-
Recordkeeping

CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS (CONTD.)

All Other Clerical & Administrative Support
Typists, Word Processing Equipment
File Clerks

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Other Mechanics, Installers, & Repairers
Automotive Mechanics
Rail Car Repairers

All Other Mining Machine Operators
Rail-Track Laying & Maintenance Equip. Opers.

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

PIMA COUNTY (CONTD.)

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING (CONTD.)

All Other Metal & Plastic Machine Operators
Machine Tool Cutting Operators & Tenders - Metal & Plastic

All Other Machine Operators & Tenders
Furnace, Kiln, Oven, Drier, or Kettle Opers.
Crushing, Grinding, & Mixing Machine Operators

All Plant & System Operators
Stationary Engineers

All Rail Vehicle Opers. & Controllers
Railroad Brake, Signal, & Switch Operators

All Other Transportation & Moving Equip. Operators
Industrial Truck & Tractor Operators
Pump Operators
Operating Engineers

All Other Helpers, Laborers, & Material Movers, Hand
Construction Trades & Extractive Worker Helpers
Freight, Stock, & Material Movers, Hand

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

PINAL COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	59	42	-17	2	-15
Financial Managers	5	3	-2	0	-2
Personnel, Training, & Labor Relations Mgrs.	7	5	-2	0	-2
Mining, Quarrying, & Drilling Managers	19	16	-3	1	-2
General Managers & Top Executives	8	6	-2	0	-2
All Other Managers & Administrators	20	12	-8	1	-7
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	225	150	-75	13	-62
All Financial Specialists	7	5	-2	0	-2
Purchasing Agents, Exc. Wholesale, Retail, & Farm	7	5	-2	0	-2
Personnel, Training, & Labor Rel. Specialists	7	5	-2	0	-2
All Other Management Support Workers	1	0	-1	0	-1
Mining Engineers, Incl. Mine Safety	29	20	-9	3	-6
Civil Engineers, Incl. Traffic	5	3	-2	0	-2
All Other Engineers	58	40	-18	1	-17
All Engineering & Related Technicians	29	17	-12	1	-11
Geologists, Geophysicists, & Oceanographers	14	9	-5	0	-5
All Other Physical Scientists	20	14	-6	2	-4
All Other Physical & Life Science Techs.	11	8	-3	1	-2
Registered Nurses	8	5	-3	1	-2
Licensed Practical Nurses	5	3	-2	1	-1
All Other Health Professionals, Paraprofessionals, & Technicians	17	12	-5	3	-2
All Other Professional, Paraprofessional, & Technical Workers	7	4	-3	0	-3
SALES & RELATED OCCUPATIONS	6	5	-1	0	-1
First Line Supervisors & Managers - Sales	5	4	-1	0	-1
All Other Sales & Related Workers	1	1	0	0	0
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	170	116	-54	18	-36
First Line Supers.-Clerical & Admin. Support	21	15	-6	2	-4
Secretaries	12	7	-5	1	-4
Typists	9	6	-3	2	-1
Bookkeeping, Accounting, & Auditing Clerks	29	22	-7	4	-3
General Office Clerks	23	17	-6	4	-2
All Office Machine Operators	8	4	-4	0	-4
All Communication Equipment Operators	1	0	-1	0	-1
Stock Clerks - Stockroom, Warehouse, or Yard	46	33	-13	4	-9
All Other Material Recording/Scheduling/Dist.	7	3	-4	0	-4
All Other Clerical & Administrative Support	14	9	-5	1	-4
SERVICE OCCUPATIONS	25	18	-7	0	-7
All Service Supervisors & Managers	1	0	-1	0	-1
Guards & Watch Guards	15	13	-2	0	-2
All Food Service Workers	1	0	-1	0	-1
Janitors & Cleaners, Exc. Maids & Housekeeping	6	4	-2	0	-2
All Other Service Workers	2	1	-1	0	-1
AGRICULTURAL, FORESTRY, & RELATED OCCUPATIONS	2	2	0	0	0
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	3,204	2,335	-869	253	-616
First Line Managers/Supervisors - Mechanics/ Installers/Repairers	127	92	-35	16	-19
First Line Mgrs./Supers. - Construction Trades & Extraction Workers	202	148	-54	18	-36
First Line Mgrs./Supers. - Transport. Operatives	31	22	-9	5	-4
All Other First Line Managers/Supervisors - Maintenance/Production/Construction	25	17	-8	4	-4
All Inspectors, Testers, & Related	29	20	-9	2	-7
Underground Mine Machinery Mechanics	140	102	-38	11	-27
All Other Machinery Maintenance Mechanics	6	4	-2	0	-2

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

PINAL COUNTY (CONTD.)

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
Millwrights	20	14	-6	2	-4
Machinery Maintenance Workers	60	44	-16	6	-10
Maintenance Repairers, General Utility	19	14	-5	1	-4
Mobile Heavy Equip. Mechanics, Exc. Engines	75	54	-21	3	-18
Riggers	16	11	-5	1	-4
All Other Mechanics, Installers, & Repairers	154	110	-44	13	-31
Electricians	183	133	-50	16	-34
All Other Construction Trades Workers	145	104	-41	12	-29
Earth Drillers, Exc. Oil & Gas	17	11	-6	0	-6
Roof Bolters	67	49	-18	7	-11
Continuous Mining Machine Operators	41	30	-11	4	-7
Mine Cutting & Channeling Machine Operators	73	53	-20	8	-12
All Other Mining Machine Operators	64	45	-19	6	-13
Blasters & Explosives Workers	224	164	-60	14	-46
All Precision Metal Workers	37	27	-10	3	-7
Boiler Operators & Tenders, Low Pressure	9	6	-3	0	-3
Cleaning, Washing, & Pickling Equipment Opers.	7	5	-2	0	-2
Crushing, Grinding, & Mixing Machine Operators	64	51	-13	5	-8
All Other Machine Operators & Tenders	71	51	-20	7	-13
Solderers & Brazers	5	3	-2	0	-2
All Other Hand Workers	187	136	-51	18	-33
Stationary Engineers	14	10	-4	1	-3
All Motor Vehicle Operators	137	107	-30	7	-23
All Rail Vehicle Opers. & Controllers	44	31	-13	4	-9
Loading Machine Operators, Underground Mining	353	258	-95	14	-81
Shuttle Car Operators	44	32	-12	4	-8
Hoist & Winch Operators	10	7	-3	0	-3
Industrial Truck & Tractor Operators	24	17	-7	1	-6
All Other Transportation & Moving Equipment Operators	191	141	-50	13	-37
Construction & Extraction Worker Helpers	158	118	-40	15	-25
All Other Helpers & Laborers	131	94	-37	12	-25
TOTAL ALL OCCUPATIONS	3,691	2,668	-1,023	286	-737

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Financial Specialists
Accountants & Auditors

All Other Engineers
Metallurgical & Materials Engineers
Mechanical Engineers

All Engineering & Related Technicians
Surveying & Mapping Scientists
Drafters

All Other Physical Scientists
Chemists, Exc. Biochemists

All Other Physical & Life Science Techs.
Chemical Techs., Exc. Health

CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS

All Other Clerical & Administrative Support
Payroll & Timekeeping Clerks

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Other Inspectors, Testers, & Related
Production Inspectors, Testers, & Graders

All Other Mechanics, Installers, & Repairers
Automotive Mechanics
Bus & Truck Mechs., & Diesel Eng. Specialists
Rail Car Repairers

All Other Construction Trades Workers
Carpenters
Painters & Paperhangers - Construction & Maintenance
Plumbers, Pipefitters, & Steamfitters

All Other Mining Machine Operators
Blasters & Explosives Workers

All Precision Metal Workers
Machinists

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

PINAL COUNTY (CONTD.)

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING (CONTD.)

All Other Machine Operators & Tenders
Furnace, Kiln, Oven, Drier, or Kettle Opers.
Separating & Filtering Machine Operators

All Other Hand Workers
Welders & Cutters

All Motor Vehicle Operators
Truck Drivers, Heavy or Tractor Trailer

All Rail Vehicle Opers. & Controllers
Rail Yard Engineers, Dinkey Opers. & Hostlers
Railroad Brake, Signal, & Switch Operators

All Other Transportation & Moving Equipment Operators
Excavating & Loading Machine Operators
Grader, Dozer, & Scraper Operators
Crane & Tower Operators
Pump Operators

All Other Helpers & Laborers
Mechanic & Repairer Helpers

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

YAVAPAI COUNTY

	ESTIMATED MAY 1984 EMPLOYMENT	PROJECTED MAY 1988 EMPLOYMENT	JOB OPENINGS DUE TO GROWTH 1984-1988	JOB OPENINGS DUE TO SEPARATIONS 1984-1988	TOTAL JOB OPENINGS 1984-1988
MANAGERIAL & ADMINISTRATIVE OCCUPATIONS	18	10	-8	0	-8
Mining, Quarrying, & Drilling Managers	5	4	-1	0	-1
All Other Managers & Administrators	13	6	-7	0	-7
PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL	53	33	-20	1	-19
All Financial Specialists	6	3	-3	0	-3
All Other Management Support Workers	6	4	-2	0	-2
All Engineers	13	9	-4	0	-4
All Engineering & Related Technicians	2	2	0	0	0
All Physical Scientists	13	9	-4	0	-4
All Other Physical & Life Science Techs.	2	0	-2	0	-2
All Health Professionals, Paraprofessionals, & Technicians	9	5	-4	1	-3
All Other Professional, Paraprofessional, & Technical Workers	2	1	-1	0	-1
SALES & RELATED OCCUPATIONS	2	1	-1	0	-1
CLERICAL & ADMINISTRATIVE SUPPORT OCCUPATIONS	23	15	-8	0	-8
Secretaries	6	5	-1	0	-1
General Office Clerks	6	4	-2	0	-2
All Material Recording/Scheduling/Dist.	5	4	-1	0	-1
All Other Clerical & Administrative Support	6	2	-4	0	-4
SERVICE OCCUPATIONS	9	6	-3	0	-3
All Protective Service Workers	6	4	-2	0	-2
All Other Service Workers	3	2	-1	0	-1
PRODUCTION, MAINTENANCE, & MATERIAL HANDLING	185	137	-48	5	-43
First Line Managers/Supervisors - Mechanics/ Installers/Repairers	9	6	-3	1	-2
All Other First Line Managers/Supervisors - Maintenance/Production/Construction	14	9	-5	0	-5
All Machinery Maintenance Mechanics	9	6	-3	0	-3
Mobile Heavy Equip. Mechanics, Exc. Engines	11	8	-3	0	-3
All Other Mechanics, Installers, & Repairers	14	9	-5	0	-5
Electricians	7	5	-2	0	-2
Plumbers, Pipefitters, & Steamfitters	5	3	-2	0	-2
All Other Construction Trades Workers	3	2	-1	0	-1
All Extraction Workers, Exc. Helpers	10	8	-2	0	-2
Separating & Filtering Machine Operators	13	9	-4	1	-3
All Other Machine Operators & Tenders	7	6	-1	0	-1
All Hand Workers	6	4	-2	0	-2
All Plant & System Operators	1	0	-1	0	-1
All Motor Vehicle Operators	16	19	3	1	4
Operating Engineers	19	14	-5	1	-4
All Other Transportation & Moving Equipment Operators	26	18	-8	1	-7
All Other Helpers & Laborers	15	11	-4	0	-4
TOTAL ALL OCCUPATIONS	290	202	-88	6	-82

Confidential data for certain occupations have been added to "All" or "All Other" categories or collapsed into major occupational classes as follows:

PROFESSIONAL, PARAPROFESSIONAL, & TECHNICAL

All Financial Specialists
Accountants & Auditors

All Engineers
Metallurgical & Materials Engineers

All Physical Scientists
Geologists, Geophysicists, & Oceanographers

ESTIMATED EMPLOYMENT AND JOB OPENINGS

MINING

YAVAPAI COUNTY (CONTD.)

SERVICE OCCUPATIONS

All Protective Service Workers
Guards & Watch Guards

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING

All Other Mechanics, Installers, & Repairers
Machinery Maintenance Workers

All Extraction Workers, Exc. Helpers
Mine Cutting & Channeling Machine Operators

All Other Machine Operators & Tenders
Crushing, Grinding, & Mixing Machine Operators

PRODUCTION, MAINTENANCE, & MATERIAL HANDLING (CONTD.)

All Hand Workers
Welders & Cutters

All Motor Vehicle Operators
Truck Drivers, Heavy or Tractor Trailer

All Other Transportation & Moving Equip. Operator
Excavating & Loading Machine Operators

All Other Helpers & Laborers
Construction & Extraction Worker Helpers

METHODOLOGY

Sample Selection and Response Rates

Occupational estimates for the mining industry were developed from a survey of employers throughout the state. Employers who were asked to participate in the survey were selected from a master employer file of firms doing business in Arizona, using standardized sampling techniques. A sample of establishments employing 4-99 employees and all establishments having 100 or more employees were surveyed. The entire sample was composed of 106 firms with a usable response rate of 88 percent. Firms responding, however, accounted for 99 percent of the industry's employment.

Employment Projections

Projecting occupational employment and demand is accomplished in two basic stages. First, total mining employment is estimated for the target years. These forecasts are computed using an econometric model driven by forecast values for variables such as national unemployment, interest rates, and industrial production. Staffing pattern ratios, as determined by the OES survey, are then applied to the industry employment projections -- representing the second stage of the forecasting methodology.

Job Openings

"Total Job Openings" represents the sum of openings resulting from expansion and replacement during the projection period. Expansion is the numerical difference in employment for a given period. Replacement represents job openings that transpire due to separations from the labor force, i.e., death, retirement, and pregnancy.[1] The "Total Job Openings" column does not account for labor turnover, i.e., openings created when a worker changes jobs, leaving the job to be filled by someone else. These vacancies are generally the largest source of job openings.

Limitations of the Data

The projection method does not account for cyclical, seasonal, and such external factors as sudden discontinuations or initiations of major government programs.

Employment forecasts for the nonmetropolitan counties are based on growth rates developed for the "balance of state" (Arizona less Maricopa and Pima counties) rather than for individual counties.

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[1] "Tomorrow's Manpower Needs," Supplement No. 4, BLS, 1974, pp. 11-16.

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